Division of Migratory Bird Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive – MBSP-4107
Arlington, VA 22203

January 14, 2011

Mr. Aaron Goldschmidt, Esq.

Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Comments of the U.S. Fish and Wildlife Service's Division of Migratory Bird Management filed electronically, on WT Docket No. 08-61 and WT Docket No. 03-187, Regarding the Environmental Effects of the Federal Communication Commission's Antenna Structure Registration Program

Dear Mr. Goldschmidt:

The Division of Migratory Bird Management (DMBM), U.S. Fish and Wildlife Service (FWS or Service) is pleased to provide the following comments on the Federal Communication Commission's (FCC or Commission) Antenna Structure Registration Program (ASRP). We had planned to present oral comments before the Commission on December 6, 2010, but at the last minute were unable to attend.

Introductory Comments

The Service appreciates the opportunity to continue working with the FCC, a relationship that was spurred by a large single-night kill of up to 10,000 Lapland Longspurs and other birds at 4 adjacent communication towers and a nearby, lighted outbuilding near Syracuse, Kansas, in February 1998. The relationship with FCC more formally began in 1999 at an avian-communication tower workshop at Cornell University at which the FCC was a presenter, and with the 1999 formation of the Communication Tower Working Group that we currently chair and which the FCC has been an active participant. We look forward to maintaining this collaborative relationship into the future while significantly reducing the "take" (defined as, "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" without a permit; 50 CFR 10.12) of migratory birds at communication towers.

Statutory and Regulatory Issues Affecting Migratory Birds

The Service now protects and manages 1,007 migratory birds (50 CFR 10.13, March 1, 2010). Each time a protected bird strikes a communication tower and is killed or injured, the collision represents an unpermitted "take" under the Migratory Bird Treaty Act (MBTA; 16 U.S.C. 703-712), a strict liability statute. While yet to be validated in wild breeding birds in North America, radiation from cellular communication towers in Europe is being documented as a problem for nesting birds, resulting in reduced recruitment, poor chick survivorship and mortality around cellular communication towers where nesting is occurring (Balmori 2005, Balmori and Hallberg 2007, and Everaert and Bauwens 2007). Radiation at the same frequency and intensity as that used in cellular telephones in the U.S. has been validated in the laboratory as a problem for domestic chicken embryos, resulting in deaths (DeCarlo et al. 2002, Manville 2009). If radiation is injuring or killing wild migratory birds, this represents yet another unpermitted "take" of protected species in the U.S.

Bald and Golden Eagles are additionally protected under the Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. 668-668d), also a strict liability statute. The Service updated the definition of "disturb" under BGEPA (50 CFR 22.3) to include:

> "to agitate or bother a Bald or Golden Eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

To implement this definition, in late 2009 the Service promulgated 2 new regulations that would allow "take" including "disturbance" and limited "take resulting in mortality" (50 CFR 22.26) and "take" of eagle nests for health and safety reasons (50 CFR 22.27). Where communication towers "take" Bald Eagles – either through "disturbance" or by lethal means – an individual "take" permit would be required to be in compliance with the law. The exception is for the Sonoran Desert population of Bald Eagles still listed under ESA.

For Golden Eagles, we will likely only consider programmatic "take" permits (defined under 50 CFR 22.3 as "take that is recurring, is not caused solely by indirect effects, and that occurs over the long term or in a location or locations that cannot be specifically identified"). For both species, permits will only be issued where the breeding population of the raptor is stable or increasing. Thus provisions regarding "disturbance" and "take" under BGEPA now need to be evaluated both by the FCC and by tower developers, owners and lessees. We suggest tower owners and/or operators contact the nearest FWS Ecological Service's Field Office for guidance on eagle issues and permitting. Guidance for implementing individual and programmatic take permits is presently being developed. Additional details can be found on the Service's Migratory Bird website (www.fws.gov/migratorybirds/) as this information becomes available to the public.

Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds; January 10, 2001) states that "…each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement…a Memorandum of Understanding with the Fish and Wildlife Service that shall promote the conservation of migratory bird populations" (*Federal Register* 66(11):3854). The Service strongly encourages the FCC to develop, sign and implement an MOU with us under the auspices of E.O. 13186. While FCC is an independent Commission, the Service is about to sign an MOU under the EO with the Federal Energy Regulatory Commission, yet another independent Commission. We encourage development of a similar MOU with the FCC which could include the ASRP as well as other communication tower-migratory bird issues raised by the Service during proposed rulemaking in 2007 (Manville 2007).

FCC National Environmental Policy Act (NEPA) Regulations

Section 1.1306 of the FCC's NEPA regulations (47 CFR 1.1301-1.1319) categorically excludes from environmental processing all Commission actions except where communication towers are to be built in wilderness, designated wildlife refuges, on flood plains, where significant surface features are affected, or where Federally listed species are affected, and for other reasons not related to migratory birds. Unless listed, migratory birds have been excluded from this review. However, the Court of Appeals in *ABC v. FCC* held that registered communication towers (i.e., those > 200 ft above ground level [AGL] in height or within 3.8 statute miles of airport approach and departure runways) may have significant adverse environmental effects on migratory birds, thus necessitating this programmatic environmental assessment (PEA). As the Service previously stated in our 2007 comments to the FCC regarding proposed rulemaking (Manville 2007), migratory birds need to be included in the FCC's NEPA review for *all* communication towers.

Based on the court's determination, this PEA is intended to determine if the ASRP has significant environmental impacts, focusing on migratory birds and listed species. The PEA will consider direct, indirect, and cumulative effects, focusing on impacts from tower location, height, guy wire support, and lighting.

Validated and Estimated Impacts from Communication Towers

Early U.S. Estimates

The impacts of communication towers on migratory birds have been reported in the U.S. scientific literature for more than half a century. Aronoff (1949) first reported several hundred migratory birds that were retrieved from a Baltimore, Maryland, radio tower in 1948. Later, Mayfield (1967) attempted to estimate nationwide bird-tower-collision mortality. During the 1970s, the Service's Bureau of Sports Fisheries and Wildlife raised upward the previous mortality estimates of Mayfield (1967) where Banks (1979) then estimated average annual mortality at 1.25 million birds/yr. This represented the best and most scientifically valid estimate

of tower mortality at the time. To update Banks' FWS mortality figure, Evans (1998) and the Service (Manville 2001a, 2001b, 2005) adjusted the Banks estimate to account for increasing numbers of towers since 1979, resulting in the Service's current estimate of 4- 5 million birds killed/yr. at all U.S. towers. A nationwide cumulative impacts analysis will help to determine the most reliable estimate of bird mortality.

A Meta-analysis

An effort by some of the most respected avian-communication tower experts in Canada and the U.S. has produced 2 nearly final manuscripts for submission to a leading scientific journal. The publications will address impacts of tall communication towers to various species of migratory birds (Longcore et al. 2011a , 2011b). The scientists have performed a meta-analysis of bird-tower collisions from published and unpublished records in Canada and the U.S. These include information from 292,925 bird specimens, of 238 different species, collected at 72 North American locations, and they calculated the mean proportion of each species killed at towers within each Bird Conservation Region (BCR) in North America. The mean proportion depends on the correlation between tower height and estimated annual avian mortality. It is already known that taller towers kill more birds than do shorter towers (Gehring and Kerlinger 2007a, 2007b, Gehring et al. in press, Manville 2007, Karlsson 1977). In the Longcore et al. (2011a) study, the authors found that more than 50% of the avian mortality was caused by towers > 984 ft AGL tall, of which only 1,021 were in their study database comprising only 1.6% of all towers examined. Based on data analysis, shorter towers, even those < 490 ft AGL contributed to approximately 25% of all mortality simply because of their sheer numbers. Towers < 600 ft AGL have for the most part been previously left out of estimates of avian mortality. The authors are now able to construct an estimate of total bird mortality that considers towers < 600 ft AGL, with help from Gehring et al. (2009) and other sources.

By geographically stratifying the estimates of avian mortality with estimates of the proportion of each bird species killed within different BCRs, Longcore et al. (2011a, 2011b) have developed geographically explicit estimates of avian mortality at communication towers by species. They compare per-species mortality estimates with population estimates of those species to evaluate the biological significance of this form of collision mortality. In the Longcore et al. (2011a, 2011b) meta-analysis, it is clear that some species are killed disproportionately to other species, contrary to Mayfield's (1967) assertion that tower kill mortality does not affect bird populations because birds are killed at towers in proportion to their abundance. Quite to the contrary, the results show that some species experience tower collision mortality far out of proportion to their population size, as illustrated by Graber (1968). While some of these new estimates should be viewed with caution, especially those with fewer specimens contributing to the mortality profile, the new estimates are especially troubling.

Longcore et al. (2011b) found that many *Birds of Conservation Concern* (BCC*;* USFWS 2008) suffer mortality equivalent to several percent of their total population size. These conditions may

be causing a population effect to some species. Specifically, 42 BCCs, 2 Federally endangered, and 1 State rare and endangered bird were found to be killed at communication towers in Canada and the U.S. based on this meta-analysis. Of these, 15 BCCs have annual mortality estimated to exceed 0.5% of their estimated population size, and 8 BCCs have mortality estimated to exceed 1.0% of their estimated population size. Mortality is estimated to approach 5% in some species, and nearly 13% for the Yellow Rail. Ten of the 20 bird species killed most frequently by percentage of their population are either BCCs or Federally or State endangered birds (i.e., the Federally endangered Bermuda Petrel [6.1%] and the State rare and endangered Pied-billed Grebe [6.2%]). The Federally threatened Red-cockaded Woodpecker was reported infrequently killed at towers (0.1%). The list of birds of concern that may be suffering impacts to their populations includes the Bay-breasted Warbler, Swainson's Warbler, Harris' Sparrow, Black-throated Blue Warbler, Golden-winged Warbler, Yellow-throated Warbler, and the Kentucky Warbler.

Overall, Longcore et al. (2011a) estimated total annual avian mortality at 3.9- 5.9 million birds in the U.S. and Canada. The 3.9-million estimate was calculated from the un-weighted regression with the new shorter towers included, while the 5.9-million estimate was calculated using the regression weighted by study length. Approximately 94% of the annual mortality was estimated east of the Rocky Mountain Front. This meta-analysis clearly raises concerns for some species at their population levels and it helps validate the Service's current tower mortality estimate.

Lighting Studies and Conservation Measures

The Michigan State Police tower lighting study of 21 towers by Gehring et al. (2009) has now clearly demonstrated – in a scientifically valid way – the existence of a proven "conservation measure" that should reduce tower mortality by a highly significant degree where L-810 steady-burning red lights can be extinguished on existing towers or not installed on new towers. The Federal Aviation Administration (FAA) has already successfully conducted several pilot conspicuity studies where L-810 lights were extinguished, FAA appears to be satisfied with the results of these studies regarding continued pilot safety, and will publish an amended lighting circular in the near future that will *not* contain L-810 lighting where it currently is required. We also understand that the FAA is considering increasing the minimum height of towers requiring lighting to 305 ft AGL to better align with tower-height lighting minimums in Canada and Europe.

Ongoing research from a 3-year, U.S. Coast Guard-funded study being conducted by J. Gehring at 6 tall towers in Michigan and 1 in New Jersey continues to validate results from the Gehring et al. (2009) research. The preliminary findings show that avian fatalities can be significantly reduced at taller communication towers by using only flashing (i.e., strobed or blinking) lighting systems without L-810 lights. Preliminary data from the New Jersey component of this study suggest that the 350 ft AGL unguyed tower in Cape May is not involved in large numbers of avian fatalities. Elimination of L-810 lighting, replaced with blinking or strobed red lighting

(white strobe-lit-towers do not require L-810 lights), was shown at some towers in Michigan to reduce avian mortality by up to 72% (Gehring et al. 2009, Manville 2007). Based in major part on the study results from Gehring et al. (2009), the Service is now recommending as one of its primary conservation measures extinguishing all L-810 lighting to significantly reduce collisions of migratory birds at communication towers where this lighting regime is presently required. We strongly recommend that the FCC include a review of all towers lit with L-810 lights as a major part of their proposed PEA and work with the Service to see that L-810 lights are extinguished on all applicable towers.

While tall towers have been documented to kill birds even under perfectly clear night skies, as Crawford and Engstrom (2001) reported moderate numbers were killed, inclement night weather events that coincide with songbird migration have been documented to be especially deadly (e.g., Manville 2007). This was well documented during fall 2005 at both tall and very short towers when heavy fog in the East and Midwest coincided with nighttime migration reported by the Service to the FCC in our comments regarding proposed rulemaking (Manville 2007:6-7). This included single-night, mass mortality events in Wisconsin, at several documented locations in New York, and at several ~ 150-ft AGL, unlit cellular telephone towers in North-central Pennsylvania. W. Evans (Executive Director, Old Bird, Inc., pers. com.) reported at least 147 salvaged birds at one of these cellular towers, mostly Blackpoll Warblers. Biologists from the Pennsylvania Game Commission verified these findings when they reported the retrieval and necropsy of at least 140 birds from one of the locations (October 19, 2005 PA Game Comm. Release # 119-05, "Bird deaths in Quehanna due to collisions"). Both Evans and the Game Commission reported that nearby, steady-burning bright light sources appeared to result in the bird congregations at the cell towers that led to the kills. This is a situation that can easily be remedied. Steady-burning lighting at out-buildings, related communication tower infrastructure (e.g., radio/television buildings or power substations), and nearby, lighted power poles, for example, should be extinguished as recommended in the Service's 2000 voluntary communication tower guidelines, 2006 recommendations to the electric utility industry (APLIC 2006), 2007 comments to the FCC, and recommendations to the Service from the 2010 Wind Energy Federal Advisory Committee. Steady-burning lights should be replaced with down-shielded, heat- or motion-sensitive security lighting that only comes "on" when it is needed. Steady-burning lights have been well documented especially in inclement weather to be major attractants for birds, resulting in numerous, well-documented mass mortality events (Manville 2007, 2009).

Concerns with Radiation Issues

Radiation impacts have only recently become a conservation issue with field studies on nesting birds initiated around 2000 in Europe (Balmori 2005, Balmori and Hallberg 2007, Everaert and Bauwens 2007) and laboratory studies conducted in the U.S. during the late 1990s on chicken embryos (T. Litovitz pers. comm., DiCarlo et al. 2002). Virtually unknown, however, are the potential effects of non-ionizing, non-thermal tower radiation on wild nesting avifauna in North

America, including at extremely low radiation levels, far below the safe exposure level previously determined for humans. Unfortunately, these "safe" levels continue to be based on thermal heating standards, now inapplicable. Based on studies in Europe, communication towers appear to be the cause of radiation impacts to breeding migratory birds. We, therefore, suggest FCC include a provision in their NEPA review to assess this aspect of the cumulative impacts of these structures in the United States. The Service is very interested in conducting radiation research on breeding birds in the United States, and would be glad to work with the FCC to make that happen as part of this NEPA review.

Service Recommendations for FCC NEPA Review

We provide the following recommendations to be incorporated into the FCC's NEPA review of the ASRP, including those suggestions below previously provided to FCC in 2007 regarding proposed rulemaking. We suggest that FCC's NEPA review of the ASRP be as inclusive as possible.

- As early as 1999, the Service's then Director Jamie Clark urged the FCC to coordinate with the Service in the development of a Programmatic Environmental Impact Statement (PEIS) regarding communication towers. Given the documented, estimated, and predicted levels of "take" at communication towers nationwide (e.g., Longcore et al. 2011a, 2011b) – including the potential but yet un-validated impacts from radiation on breeding birds in North-American – and the "take" of migratory birds at short towers, including those unlit but guyed and < 200 ft AGL (Manville 2007), we recommend that FCC develop a PEIS rather than a PEA. The Service can work cooperatively with staff from the FCC to flesh out the components – recommended below – of a PEIS. 40 CFR 1501.6 of NEPA gives the Service authority to function as a cooperating agency and Section 1503.2 provides us the authority to comment on federally-licensed activities for agencies with jurisdiction by law, including under MBTA. Additionally, the Service is required by the ESA to assist other Federal agencies – including the Commission – to ensure that any action authorized, implemented or funded by that agency will not jeopardize the continued existence of any Federally listed species. We specifically recommend the following:

- Avoid use of any L-810 steady-burning red lights on new towers being constructed, towers whose broadcast licenses expire and must be re-issued, towers being replaced, and where L-810 side lights burn out (replace with strobe or blinking lights). Pending FAA's update to their current (2007) lighting circular – which we are advised will occur in the near future – all L-810 lights should be extinguished and all L-810 lights should be removed as part of any retrofit (Gehring et al. 2009, Manville 2009).

- Use minimum intensity, maximum "off"-phased red strobe (or strobe-like), white strobe or red blinking incandescent lights with no L-810 sidelights. Use of red or white color and use of strobe versus blinking lights were not statistically different in several previously conducted studies (Gauthreaux and Belser 2006, Gehring et al. 2009).

- Where new towers are to be constructed, or where repair or upgrade of towers will result in increased tower height, where practical attempt to keep towers under 200 ft. AGL in height, be of monopole or lattice design, and contain no guy wires and lights. This represents the Service's recommended "gold standard" and the environmentally preferred alternative for tower placement.

- On May 4, 2010, the "Infrastructure Coalition" (CTIA, NAB, PCIA, and NATE) and the "Groups" (American Bird Conservancy, National Audubon Society, and Defender of Wildlife) submitted an MOU to FCC with interim recommendations for tower height and lighting categories under the ASRP. While we generally agree with the height risk categories (i.e., new towers > 450 ft AGL be placed in Category #1 [always requiring an Environmental Assessment and always placed on public notice], those 351- 450 ft AGL in Category #2 [may not initially require an EA but will always be placed on public notice], and those ≤ 350 ft AGL in Category #3 [does not require an EA and is not placed on public notice]), we disagree with the industry's recommendation that Category #3 towers not require an EA based on avian concerns and that no public notice be required. The latter concern was a dissenting issue for the "Groups." Given the Service's desire to include all towers in a cumulative impacts analysis, ongoing evidence of tower kills at "short" towers (including some that are unlit), new concerns about radiation impacts to breeding birds – especially from cell towers – and the need to better track where towers are being situated, we recommend public notice for this category of towers. This will allow stakeholders an opportunity to raise avian concerns to which the FCC and the Service may be unaware. If the evidence in the public record becomes compelling, an EA would be required upon filing with the FCC once the Commission makes that determination. Additional recommendations include:

- Remove a tower within 12 months after it becomes inoperative.

- Where tower height and guy wires become an issue, more, shorter, unguyed and unlit towers are recommended over fewer but taller, guyed and lit towers.

- Avoid constructing towers in or adjacent to wetlands and other areas where birds concentrate in large numbers or where listed, imperiled, or disturbance- sensitive birds are present.

- Avoid use of any lighting on tower infrastructure (e.g., outbuildings and power stations) that remains lit during the night. Instead, use motion or heat-sensitive lights that operate only for short periods, and down-shield all such lighting.

- FCC should require development and use of a Tower Site Evaluation Form, similar to the one created by the Service that accompanied the 2000 voluntary tower guidance. The FCC should require that the industry complete and submit this form to the appropriate Ecological Services Field Office for review, allowing the Service to make a "study or no-study" determination for tower placement at a proposed site. We provided suggested language to the FCC in our 2007 comments (Manville 2007:25).

- Under FCC's NEPA review, we recommend the Commission consider including voluntary bird mortality reporting to the Service by tower owners, operators, or their lessees once a tower is sited and constructed. The Service already maintains a password-protected, voluntary reporting system administered by the Office of Law Enforcement which dozens of electric utilities are presently using, a wind generation company is field-testing, and which could be modified for use by communication tower owners and operators (https://birdreport.fws.gov/). Such reporting could help better understand when and where mass mortality events occur, and begin to better determine cumulative effects. However, if a tower operator or consultant wishes to "possess" a bird carcass, a Scientific Collecting (50 CFR 21.23) or Special Purpose permit (50 CFR 21.27) is required, which includes mandatory reporting as a condition of both permits.

- FCC should require a post-construction monitoring process that assesses and evaluates mortality and/or habitat fragmentation and disturbance at a statistically significant sample of communication towers of different height classes (i.e., unlit, lit, unguyed, guyed,

cellular, radio, television, DTV, emergency broadcast, and others). This will help to begin addressing the cumulative impacts assessment.

- FCC and the tower owners and operators it regulates need to coordinate with DMBM, the appropriate Ecological Services Field Office, and the pertinent Regional eagle biologist regarding the possibility of eagle "take" at a communication tower or its infrastructure resulting in "disturbance" or "take resulting in mortality" for both Bald and Golden Eagles under 50 CFR 22.26, and for "take" of eagle nests for health and safety reasons for eagles and humans under 50 CFR 22.27. Where "take" occurs, a permit under these regulations is required under BGEPA. The Service's eagle and migratory bird experts would be glad to coordinate with the tower owners and operators in avoiding unpermitted eagle "take."

- The FCC must consult with the Service, as required by Section 7 of the ESA, where any listed species and/or their critical habitats are impacted by the ASRP.

- Under auspices of FCC's NEPA review, the FCC should develop and implement an MOU with the Service under E.O. 13186 – incorporating the ASRP as part of this suggested MOU.

This concludes our recommendations to the FCC on the Antenna Structure Registration Program. We appreciate the opportunity to comment on this important program and look forward to making communication towers much more bird-friendly. Should you have any specific questions about these comments, please contact Dr. Albert Manville of our Division (703/358-1963; albert_manville@fws.gov). Respectfully submitted,

Marcia Pradines

/s/

Acting Chief, Division of Migratory Bird Management, USFWS

Arlington, Virginia

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